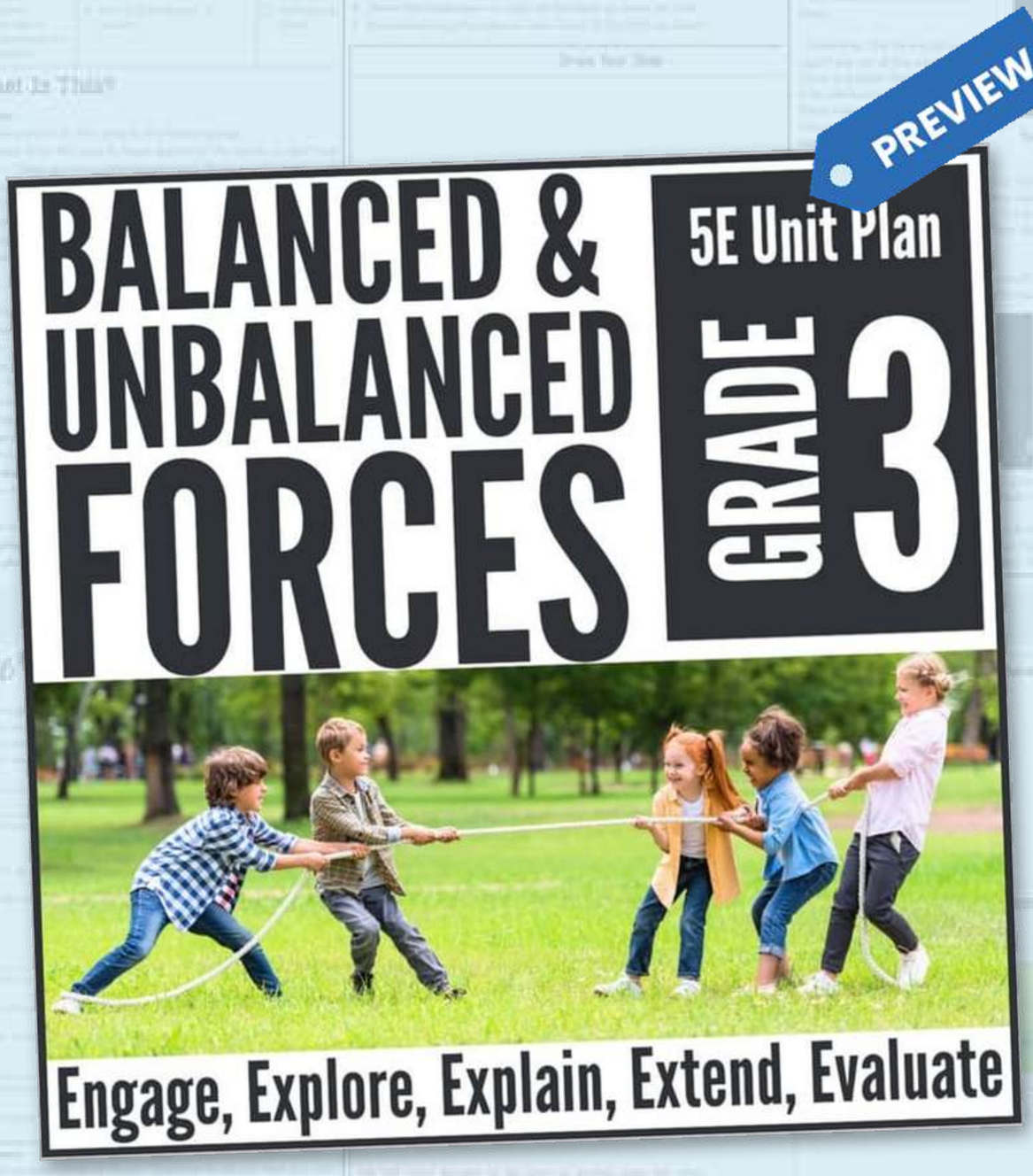


3RD GRADE

A Complete 5E Science Unit with Lesson Plans

BALANCED & UNBALANCED FORCES

Engage, Explore, Explain, Extend, Evaluate

NGSS 3-PS2-1

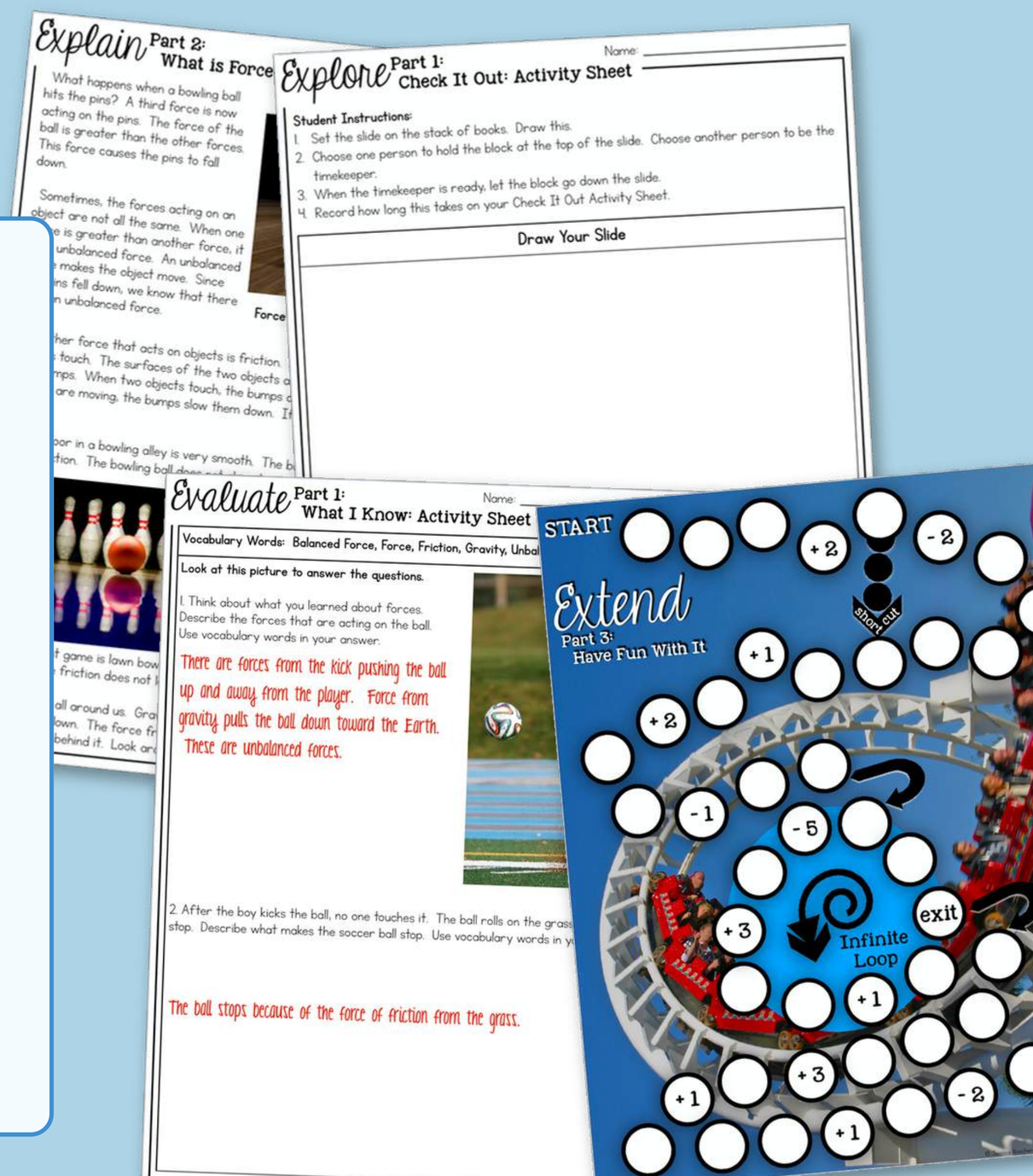


KEEP SCROLLING TO SEE WHAT'S INSIDE!

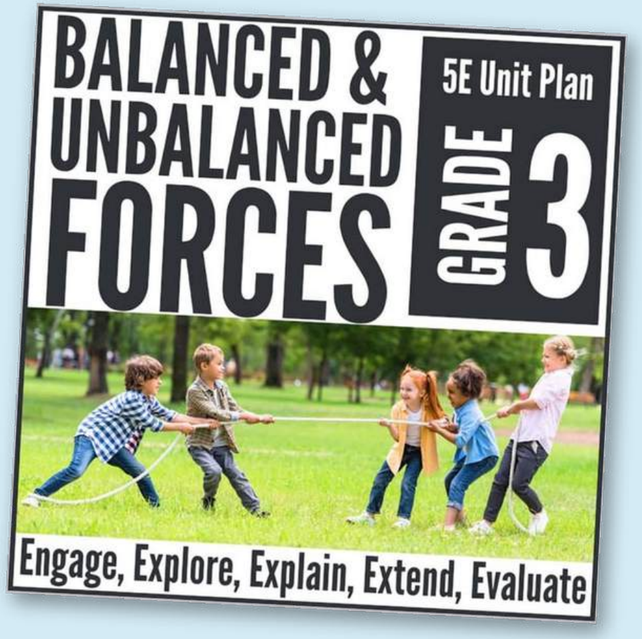
WHAT'S INCLUDED

5E FORCE AND MOTION UNIT

- 149-Page 5E Unit Plan
- Lesson Plans for All 5 Phases
- Teacher Notes and Misconceptions
- Materials Checklist and 4 Timelines
- Student Activity Sheets and Article
- 4 Note-Taking Formats for the Reading
- Vocabulary Cards and 6 Big Idea Posters
- 7 Exit Tickets in 3 Formats
- Performance Assessment and Review Game
- Answer Keys for Every Phase
- Google Slides and Google Forms Versions



UNIT AT A GLANCE



- Students investigate how forces change motion.
- Teacher background, lesson plans, and student pages in every phase.
- Aligned to NGSS 3-PS2-1.

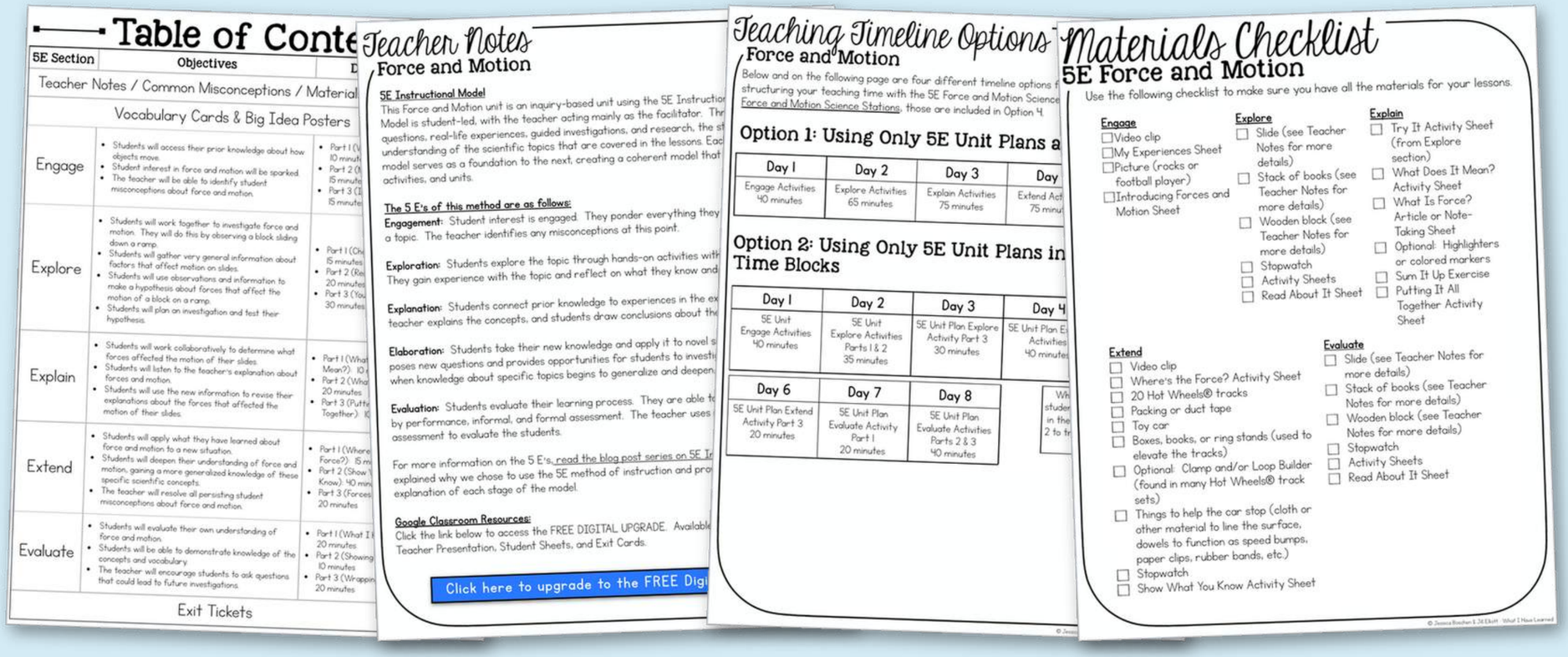
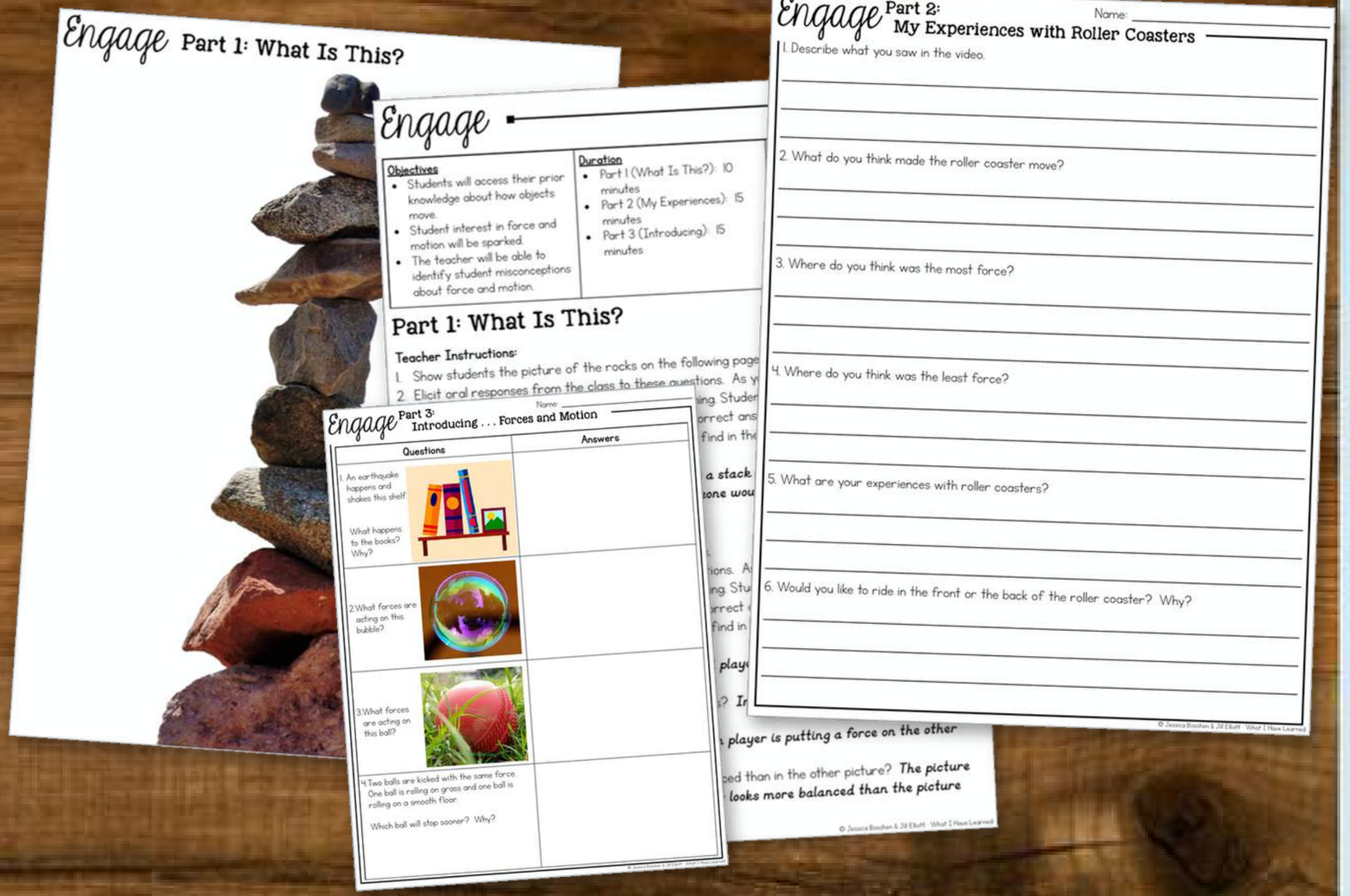


Table of Contents **Teacher Notes** **Timeline Options** **Materials Checklist**

ENGAGE



Teacher background, lesson plans, student pages, and answer key

E E E E E

Spark curiosity and uncover misconceptions

1 What Is This?

Students look at photos of stacked rocks and football players and discuss what is happening and why.

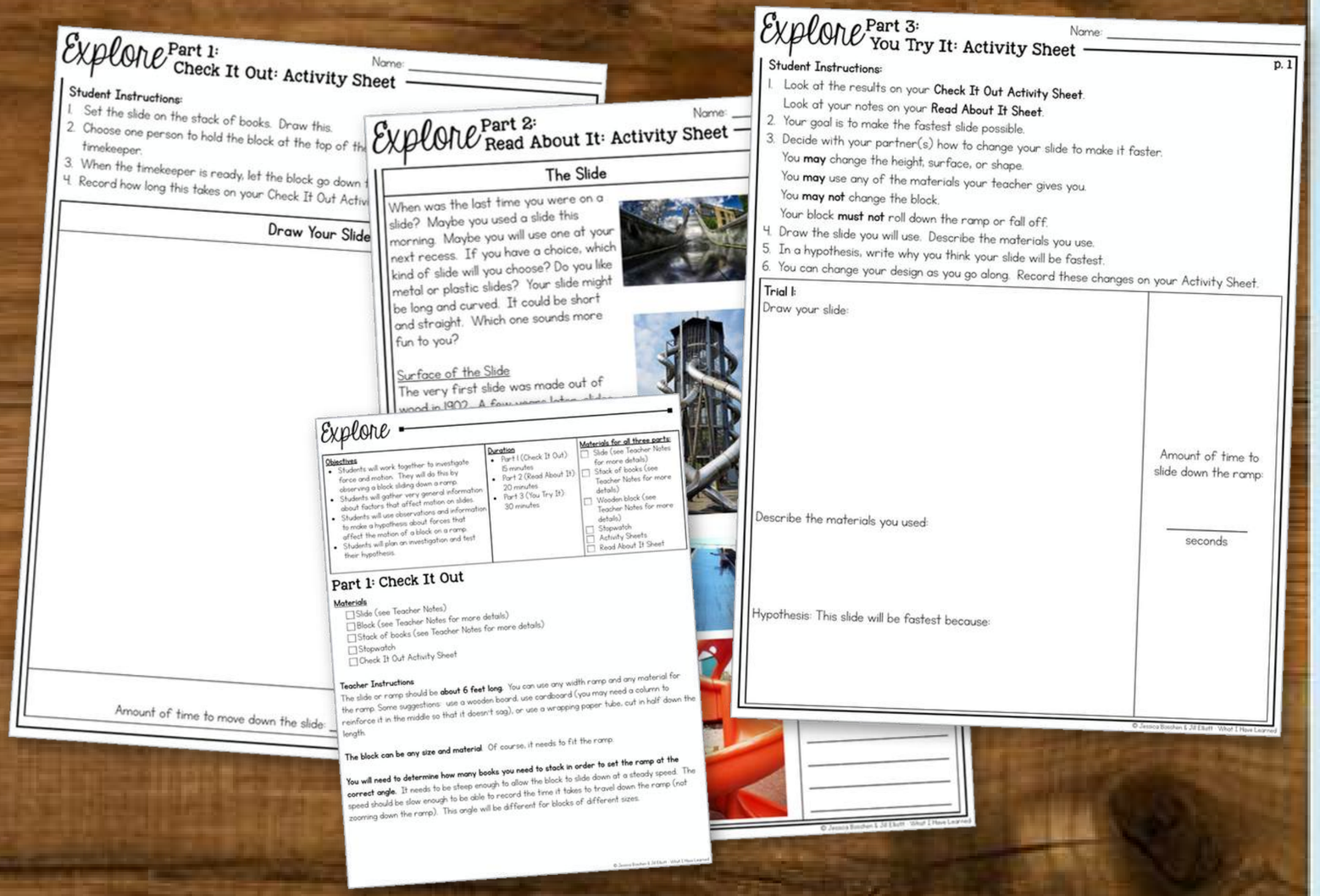
2 My Experiences

Students watch a roller coaster video and describe what made it move.

3 Introducing Forces and Motion

Students answer questions about photos such as a bookshelf and a bubble to name the forces acting on each.

EXPLORE



Teacher background, lesson plans, student sheets, and teacher reflection

E E E E E

Investigate how a block moves down a ramp

1 Check It Out

Students slide a block down a ramp, observe what happens, and draw their slide.

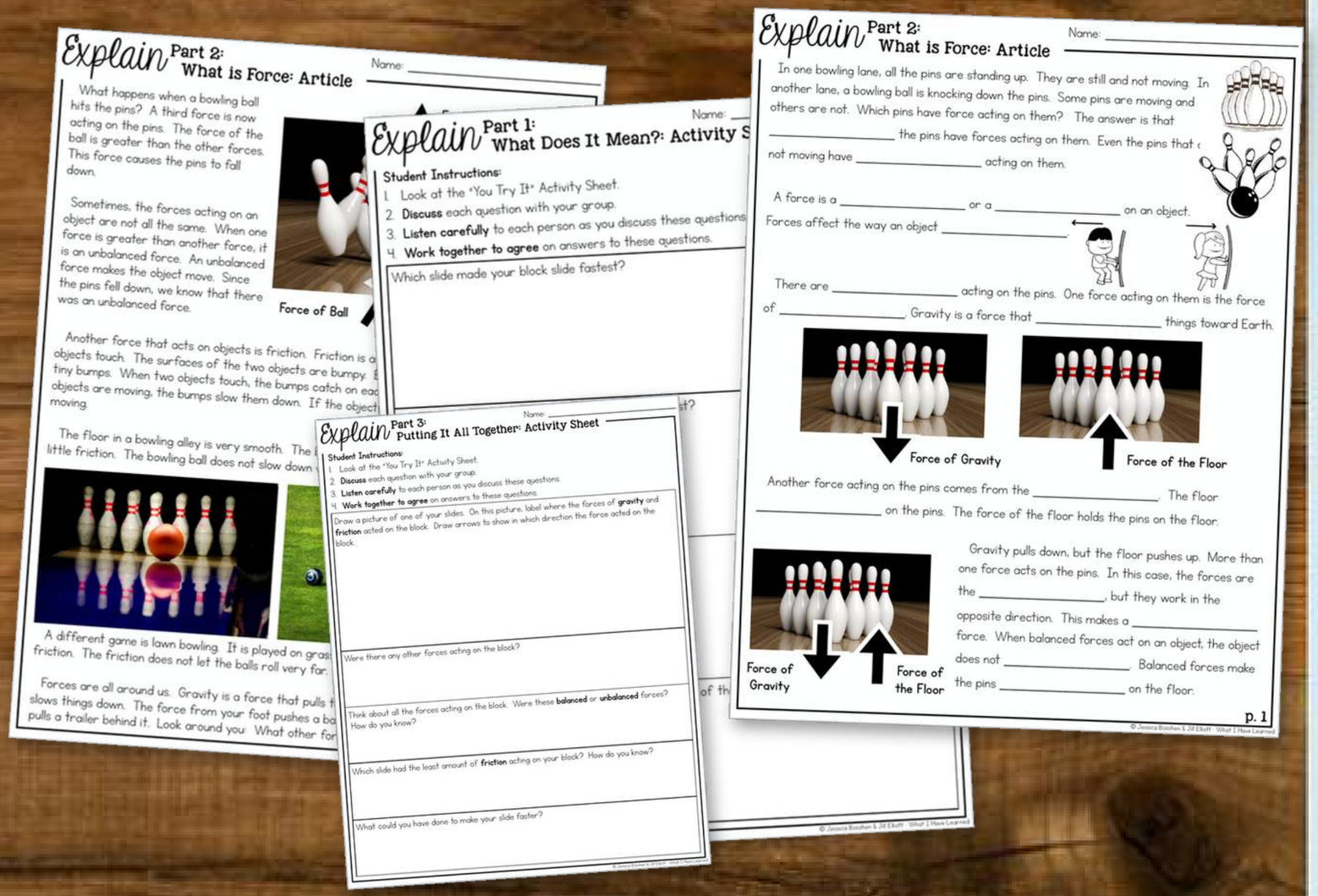
2 Read About It

Students read about slides made from different materials and record notes on the Read About It sheet.

3 You Try It

Students write a hypothesis, change one factor, and time several trials on their activity sheet.

EXPLAIN



Teacher background, lesson plans, student pages, and answer key

E E E E E

Build explanations from evidence

1 What Does It Mean?

Students share Explore findings with partners and make a first guess about what force means.

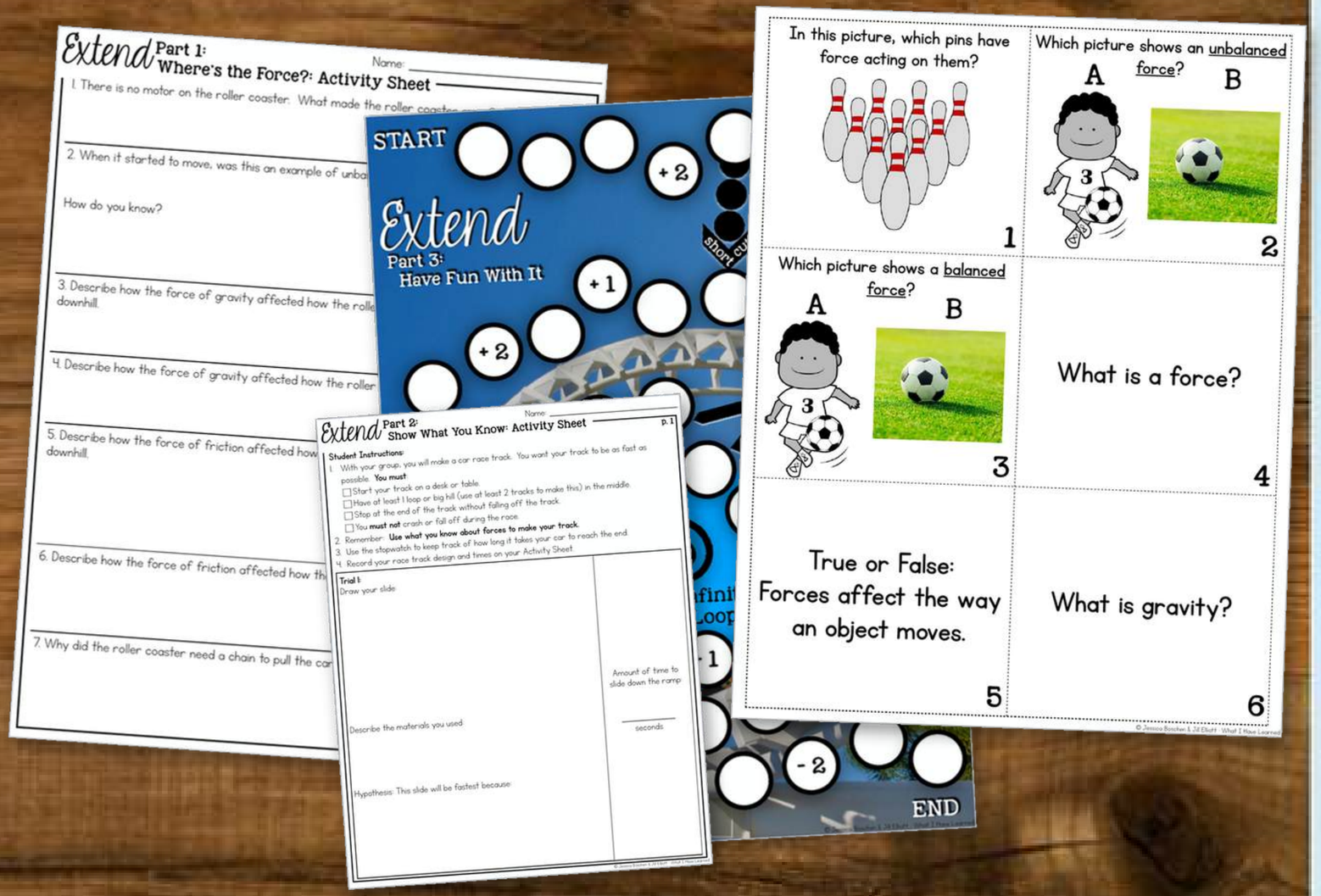
2 What Is Force?

Students read an article about forces on bowling pins, with four note-taking options to match each learner.

3 Putting It All Together

Students return to their slides and explain which forces acted on the block and whether they were balanced.

EXTEND



Teacher background, lesson plans, student pages, and answer key

E E E E E

Apply forces to new situations

1 Where's the Force?

Students analyze a roller coaster video and explain how gravity and friction affected its motion.

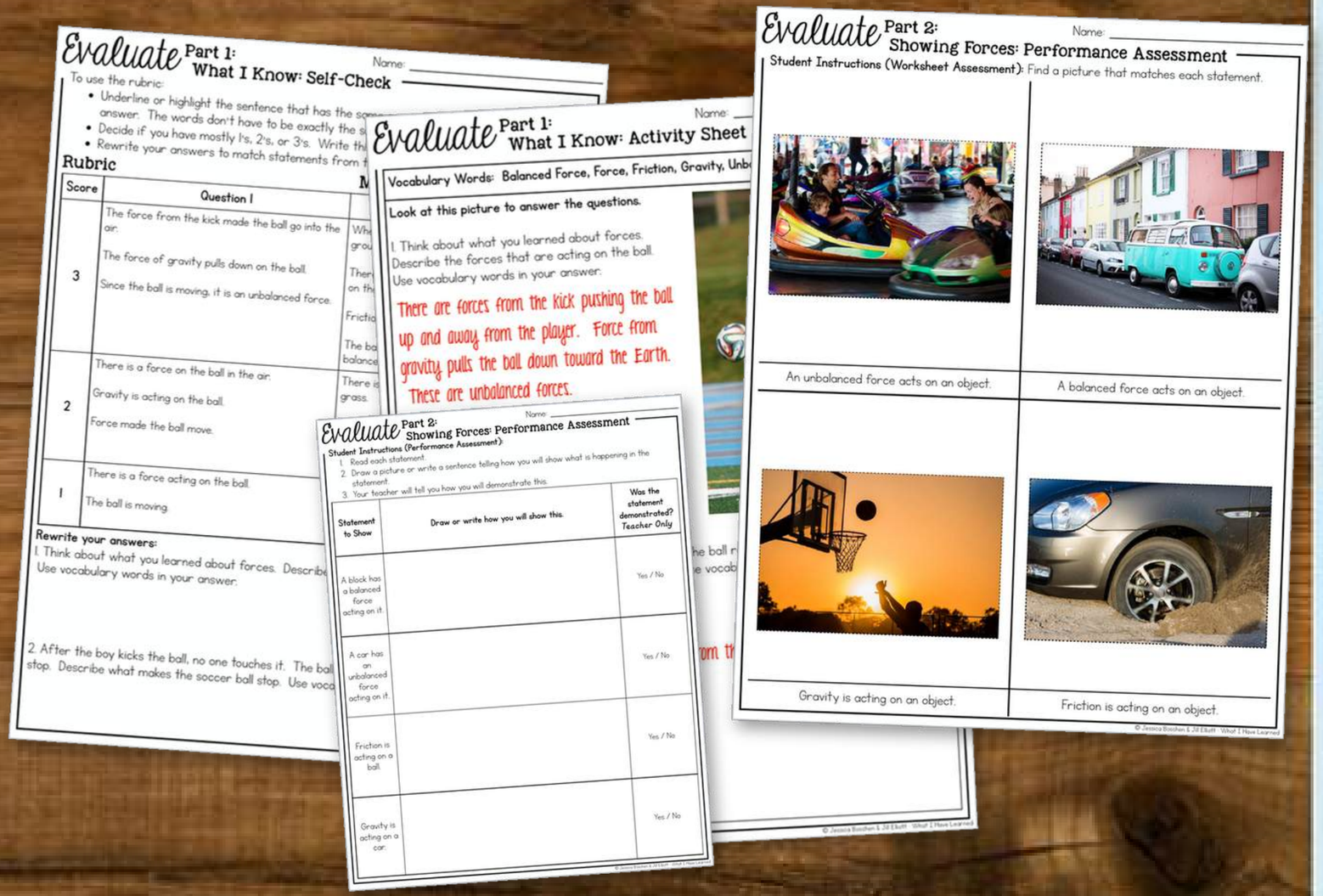
2 Show What You Know

Students design a toy car track, write a hypothesis, and test it across trials.

3 Review Game

Students review forces with the Infinite Loop board game and its question cards.

EVALUATE



Teacher background, lesson plans, student pages, and answer key

E E E E E

Check understanding with evidence

1 What I Know

Students complete a vocabulary and photo activity sheet, then score themselves with a rubric.

2 Showing Forces

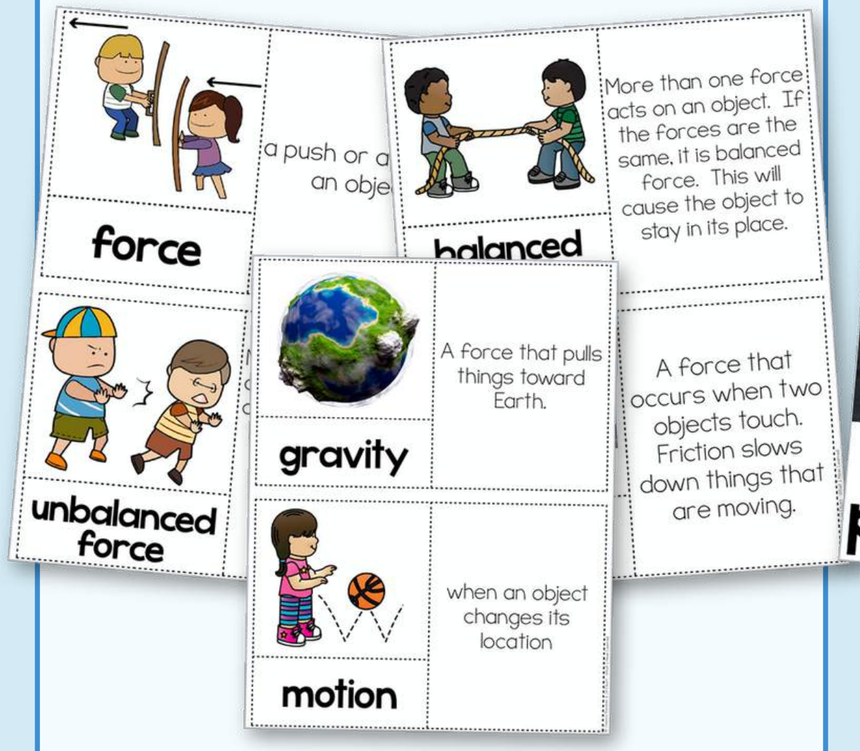
Students match photos to statements about balanced and unbalanced forces in a performance or worksheet assessment.

3 Going Forward

Students pose a new question about forces, write a hypothesis, and plan an experiment.

VOCABULARY, POSTERS & EXIT TICKETS

VOCABULARY CARDS
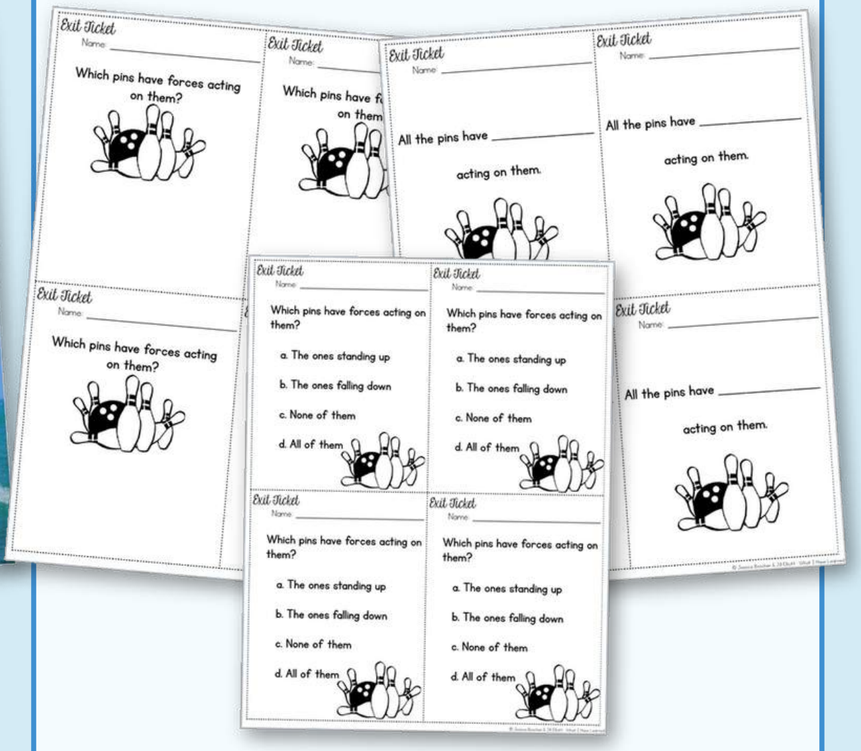


Picture cards and word cards for force, balanced force, unbalanced force, friction, gravity, and motion.

BIG IDEA POSTERS



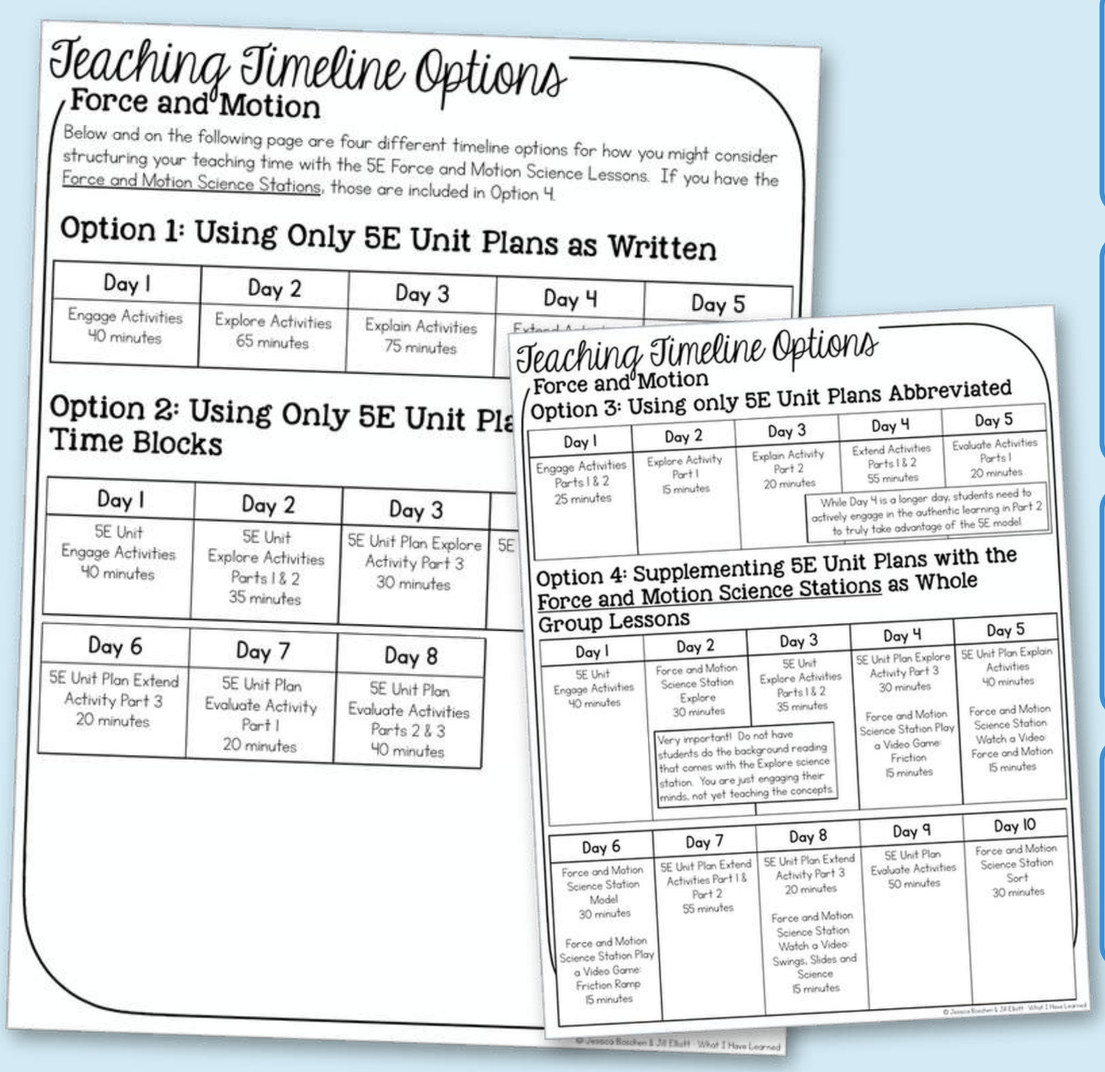
Six posters on force, more than one force, balanced forces, unbalanced forces, friction, and gravity.

EXIT TICKETS



7 exit tickets, each in short answer, fill-in-the-blank, and multiple choice formats.

WAYS TO USE IN YOUR CLASSROOM



Teaching Timeline Options

Force and Motion

Below and on the following page are four different timeline options for how you might consider structuring your teaching time with the 5E Force and Motion Science Lessons. If you have the Force and Motion Science Stations, those are included in Option 4.

Option 1: Using Only 5E Unit Plans as Written

Day 1	Day 2	Day 3	Day 4	Day 5
Engage Activities 40 minutes	Explore Activities 65 minutes	Explain Activities 75 minutes		

Option 2: Using Only 5E Unit Pla
Time Blocks

Day 1	Day 2	Day 3	
5E Unit Engage Activities 40 minutes	5E Unit Explore Activities Parts 1 & 2 35 minutes	5E Unit Plan Explore Activity Part 3 30 minutes	5E

Day 6	Day 7	Day 8
5E Unit Plan Extend Activity Part 3 20 minutes	5E Unit Plan Evaluate Activity Part 1 20 minutes	5E Unit Plan Evaluate Activities Parts 2 & 3 40 minutes

Teaching Timeline Options

Force and Motion

Option 3: Using only 5E Unit Plans Abbreviated

Day 1	Day 2	Day 3	Day 4	Day 5
Engage Activities Parts 1 & 2 25 minutes	Explore Activity Part 1 15 minutes	Explain Activity Part 2 20 minutes	Extend Activities Parts 1 & 2 55 minutes	Evaluate Activities Parts 1 20 minutes
		While Day 4 is a longer day, students need to actively engage in the authentic learning in Part 2 to truly take advantage of the 5E model.		

Option 4: Supplementing 5E Unit Plans with the Force and Motion Science Stations as Whole Group Lessons

Day 1	Day 2	Day 3	Day 4	Day 5
5E Unit Engage Activities 40 minutes	Force and Motion Science Station Explore 30 minutes	5E Unit Explore Activities Parts 1 & 2 35 minutes	5E Unit Plan Explore Activity Part 3 30 minutes Force and Motion Science Station Play a Video Game: Friction 15 minutes	5E Unit Plan Explain Activities 40 minutes Force and Motion Science Station Watch a Video: Force and Motion 15 minutes
	Very important! Do not have students do the background reading that comes with the Explore science station. You are just engaging their minds, not yet teaching the concepts.			

Day 6	Day 7	Day 8	Day 9	Day 10
Force and Motion Science Station Model 30 minutes Force and Motion Science Station Play a Video Game: Friction Ramp 15 minutes	5E Unit Plan Extend Activities Part 1 & Part 2 55 minutes	5E Unit Plan Extend Activity Part 3 20 minutes Force and Motion Science Station Watch a Video: Swings, Slides and Science 15 minutes	5E Unit Plan Evaluate Activities 50 minutes	Force and Motion Science Station Sort 30 minutes

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1

Whole-Class 5E Unit

Teach one phase a day over 5 days as written, with 40 to 75 minutes per phase.

2

Shorter Science Blocks

Spread the unit across 8 days in shorter time blocks when science minutes are limited.

3

Alongside Science Stations

Add the Force and Motion Science Stations for a 10-day plan.

4

Formative Checks

Use the 7 exit tickets throughout the unit to see who needs reteaching before the performance assessment.

TEACHING TIMELINE OPTIONS

Option 1
As Written

5 days

Day 1	Day 2	Day 3	Day 4	Day 5
Engage	**Explore**	**Explain**	**Extend**	**Evaluate**
40 min	65 min	75 min	75 min	50 min

Option 2
Shorter Time Blocks

8 days

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
Engage	**Explore 1-2**	**Explore 3**	**Explain**	**Extend 1-2**	**Extend 3**	**Evaluate 1**	**Evaluate 2-3**
40 min	35 min	30 min	40 min	55 min	20 min	20 min	40 min

Option 3
Abbreviated

5 days

Day 1	Day 2	Day 3	Day 4	Day 5
Engage 1-2	**Explore 1**	**Explain 2**	**Extend 1-2**	**Evaluate 1**
25 min	15 min	20 min	55 min	20 min

Option 4
With Science Stations

10 days

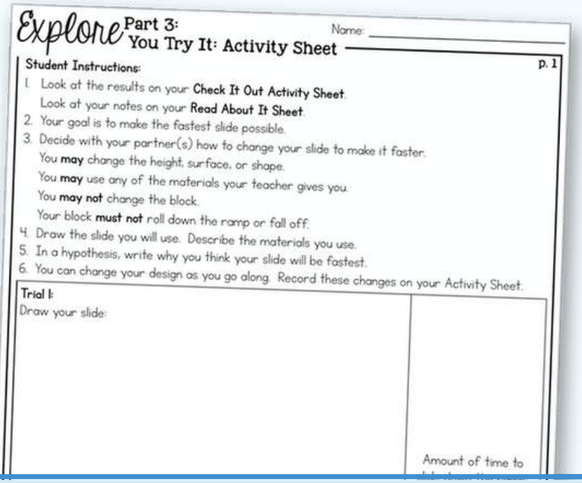
Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
Engage	**Explore**	**Explore 1-2**	**Explore 3**	**Explain**	**Model**	**Extend 1-2**	**Extend 3**	**Evaluate**	**Sort**
40 min	30 min	35 min	30 min +15 game	40 min +15 video	30 min +15 game	55 min	20 min +15 video	50 min	30 min

Orange days are Science Station lessons. Magenta notes are extra station activities you can add that day.

YOU WILL LOVE THIS BECAUSE

Students Build the Ideas Themselves

Students observe, hypothesize, and test before they meet the vocabulary, so balanced and unbalanced forces make sense through evidence.



Explore Part 3: You Try It: Activity Sheet

Name: _____

p. 1

Student Instructions:

1. Look at the results on your **Check It Out Activity Sheet**.
   Look at your notes on your **Read About It Sheet**.
2. Your goal is to make the fastest slide possible.
3. Decide with your partner(s) how to change your slide to make it faster.
   You **may** change the height, surface, or shape.
   You **may** use any of the materials your teacher gives you.
   You **may not** change the block.
   Your block **must not** roll down the ramp or fall off.
4. Draw the slide you will use. Describe the materials you use.
5. In a hypothesis, write why you think your slide will be fastest.
6. You can change your design as you go along. Record these changes on your Activity Sheet.

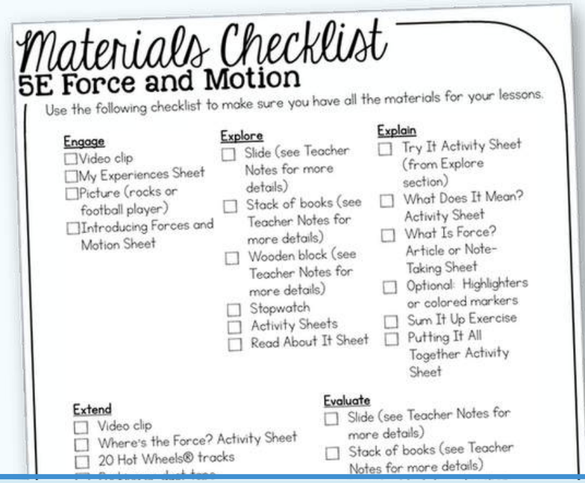
Trial 1:

Draw your slide:

Amount of time to

Planned and Ready to Teach

Teacher notes, a materials checklist, pacing, and answer keys are done for you. Your prep is gathering a few simple materials.



Materials Checklist

5E Force and Motion

Use the following checklist to make sure you have all the materials for your lessons.

Engage
- ☐ Video clip
- ☐ My Experiences Sheet
- ☐ Picture (rocks or football player)
- ☐ Introducing Forces and Motion Sheet

Explore
- ☐ Slide (see Teacher Notes for more details)
- ☐ Stack of books (see Teacher Notes for more details)
- ☐ Wooden block (see Teacher Notes for more details)
- ☐ Stopwatch
- ☐ Activity Sheets
- ☐ Read About It Sheet

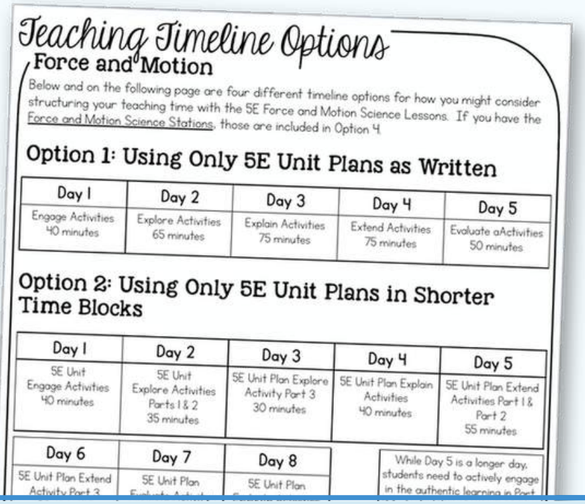
Explain
- ☐ Try It Activity Sheet (from Explore section)
- ☐ What Does It Mean? Activity Sheet
- ☐ What Is Force? Article or Note-Taking Sheet
- ☐ Optional: Highlighters or colored markers
- ☐ Sum It Up Exercise
- ☐ Putting It All Together Activity Sheet

Extend
- ☐ Video clip
- ☐ Where's the Force? Activity Sheet
- ☐ 20 Hot Wheels® tracks

Evaluate
- ☐ Slide (see Teacher Notes for more details)
- ☐ Stack of books (see Teacher Notes for more details)

Fits Your Schedule

Choose from 4 timeline options, and use the Google Slides and Google Forms versions for a print or digital classroom.



Teaching Timeline Options

Force and Motion

Below and on the following page are four different timeline options for how you might consider structuring your teaching time with the 5E Force and Motion Science Lessons. If you have the Force and Motion Science Stations, those are included in Option 4.

Option 1: Using Only 5E Unit Plans as Written

Day 1	Day 2	Day 3	Day 4	Day 5
Engage Activities 40 minutes	Explore Activities 65 minutes	Explain Activities 75 minutes	Extend Activities 75 minutes	Evaluate aActivities 50 minutes

Option 2: Using Only 5E Unit Plans in Shorter Time Blocks

Day 1	Day 2	Day 3	Day 4	Day 5
5E Unit Engage Activities 40 minutes	5E Unit Explore Activities Parts 1 & 2 35 minutes	5E Unit Plan Explore Activity Part 3 30 minutes	5E Unit Plan Explain Activities 40 minutes	5E Unit Plan Extend Activities Part 1 & Part 2 55 minutes

Day 6	Day 7	Day 8	
5E Unit Plan Extend Activity Part 3	5E Unit Plan	5E Unit Plan	While Day 5 is a longer day, students need to actively engage in the authentic learning in Part

TEACHERS LOVE IT!

★★★★★

This was a great addition to my force and motion unit! The activities were engaging, easy to implement, and helped reinforce the science concepts in a meaningful way.

Rebecca W.



★★★★★

This is such a GREAT resource!!! So much to use for differentiating!

Kimberly K.

★★★★★

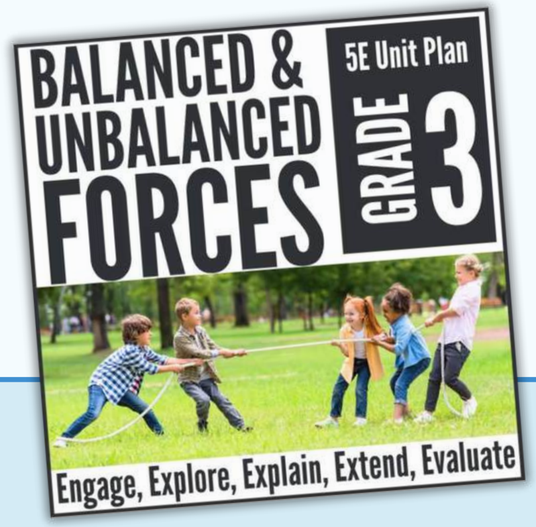
Very useful and well made. Will help me keep nice and organized. It saves me time in finding classroom activities...

Lori M.



READY FOR YOUR CLASSROOM

- **Instant digital download**
- **Print and use the activities**
- **Google Slides and Forms versions**

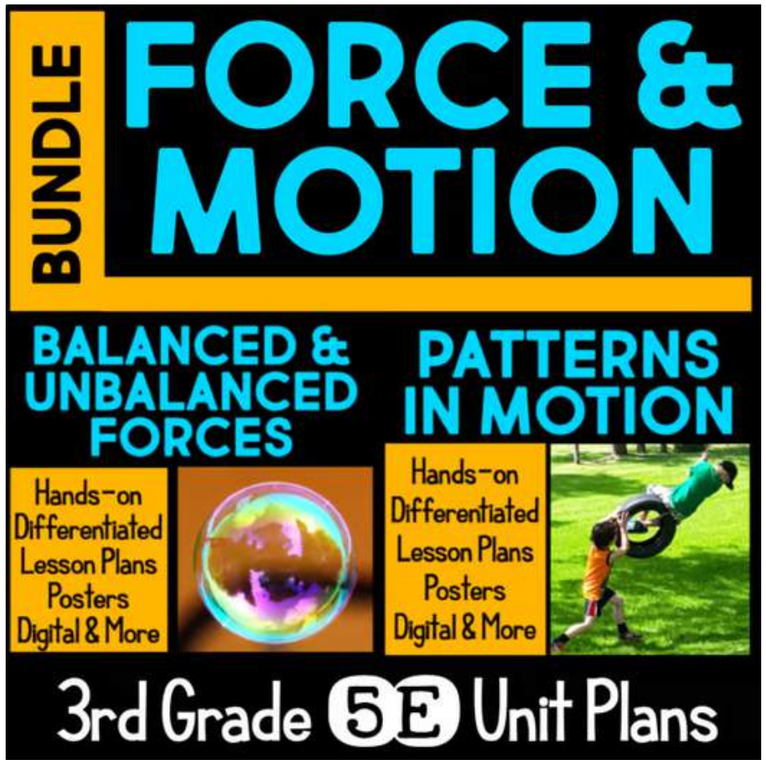


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Save with a topic bundle or the full-year bundle.

TOPIC BUNDLE

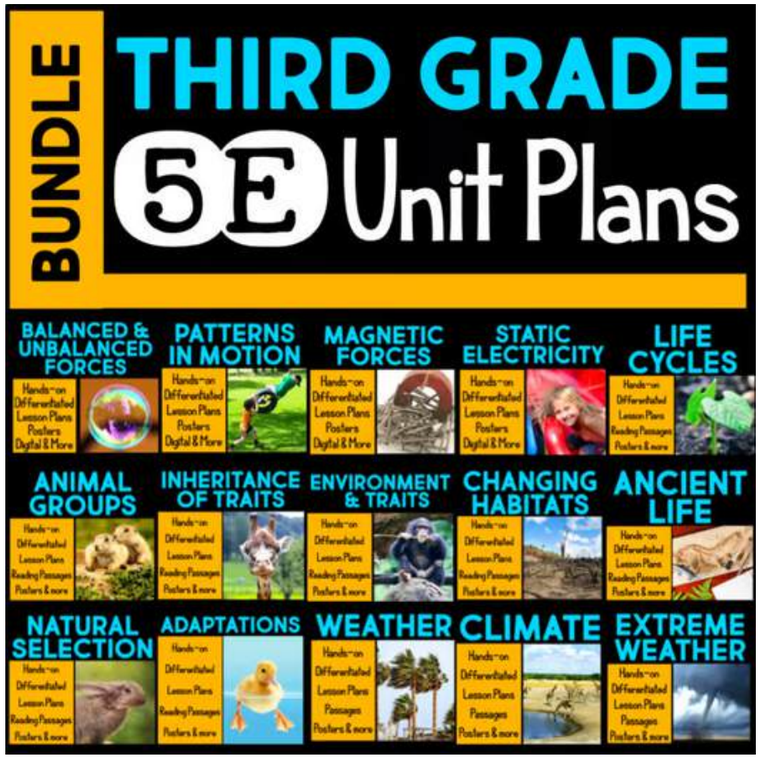
GOOD VALUE



SEE THE BUNDLE

FULL-YEAR BUNDLE

BEST VALUE



SEE THE BUNDLE

My passion is making learning accessible to all students.
I love scaffolding learning, breaking down the concepts and building them up so that students can see the connections.
I love figuring out the small components that build up to the big ideas and helping students see it all.





What I have LEARNED